



Airlift Flow Model (AFM) Migration to HLA

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GLOBAL REACH FOR AMERICA



Overview

- Background
- AFM Migration
- Observations
- Plans for the Future

Background

- **Lack of Mobility Play Raised in AF 4-Star M&S Summit**
- **Initiated Effort to Make AFM DIS Compliant for Warfight Linkage**
- **Support from AF Modernization Planning Funding**
- **Later switched to HLA**

Objectives of Migration Effort

- **Show Impact of Airlift on War Fight**
- **Capability to Interoperate with Other Models**
- **Make Air Mobility Models More Maintainable**
- **Incorporate New Functionality**
- **Simultaneous Support of Analysis**
- **Stay Within Limited Budget**

Migration Methodology

- **Carve out Functions Required to Build Objects Described in the System Object Model (SOM)**
- **Develop Internal Model Objects to Load and Use Objects from the Federation**
- **Develop Interface to RTI**
- **Incrementally Migrate Current Model Through 4 Interim Architectures**
- **“Objectify” Functions As Desired**

The Technical Challenge

Legacy Model

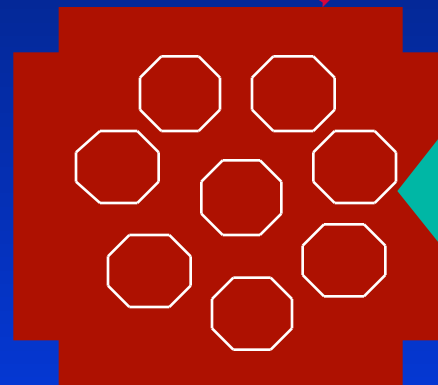


Current Model:

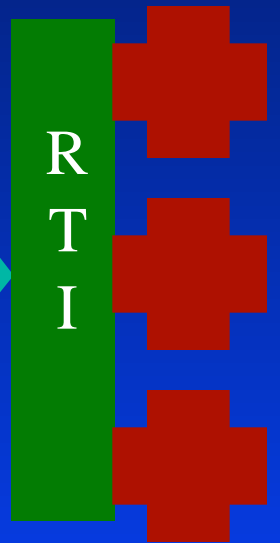
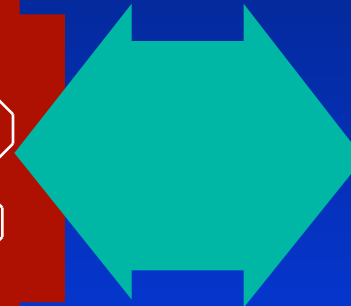
Limited Interoperability
Interdependent Procedural Code

Desired Model:

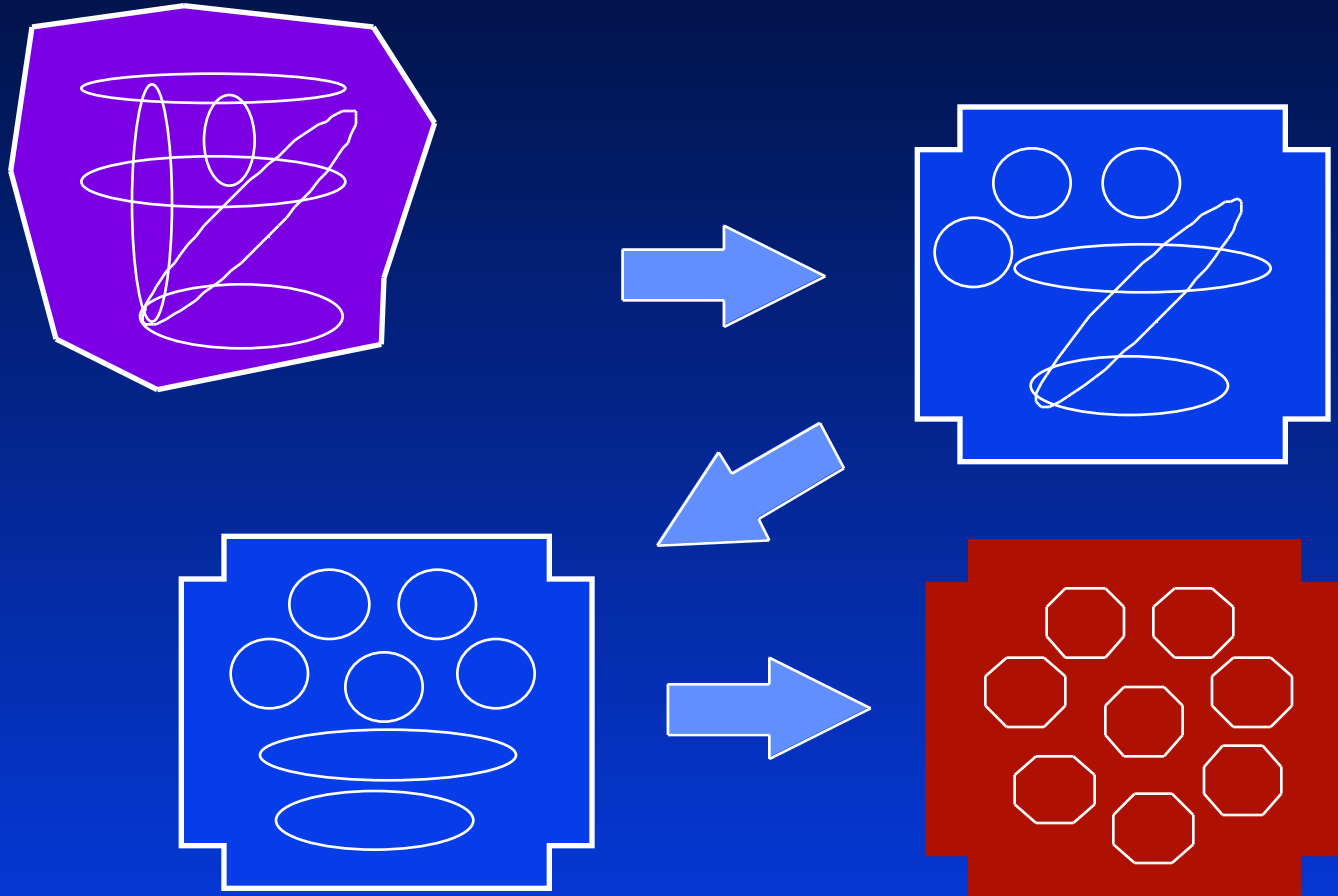
Interoperates To Play Air Mobility
Modular, Maintainable
Enhanced Functionality



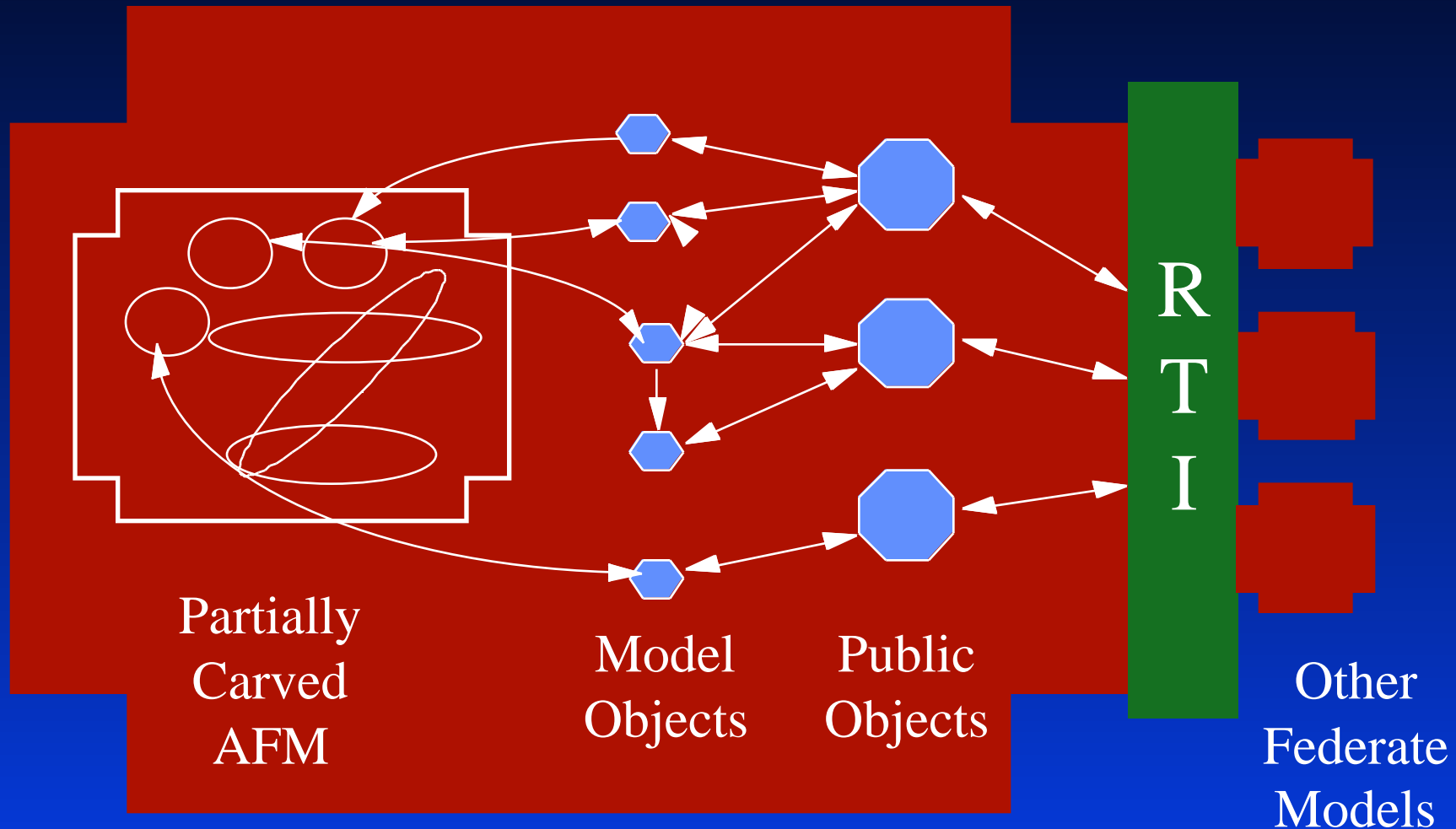
Desired Model



Incremental Carving Methodology



Object Creation and RTI Interactions



AFM Interim Architectures

Interim Architecture	Carved Subroutines		New Functionality	Public Objects
I	Block In End Sim Initalize	Macro Loader Daily Report RCA		Load Onload Offload

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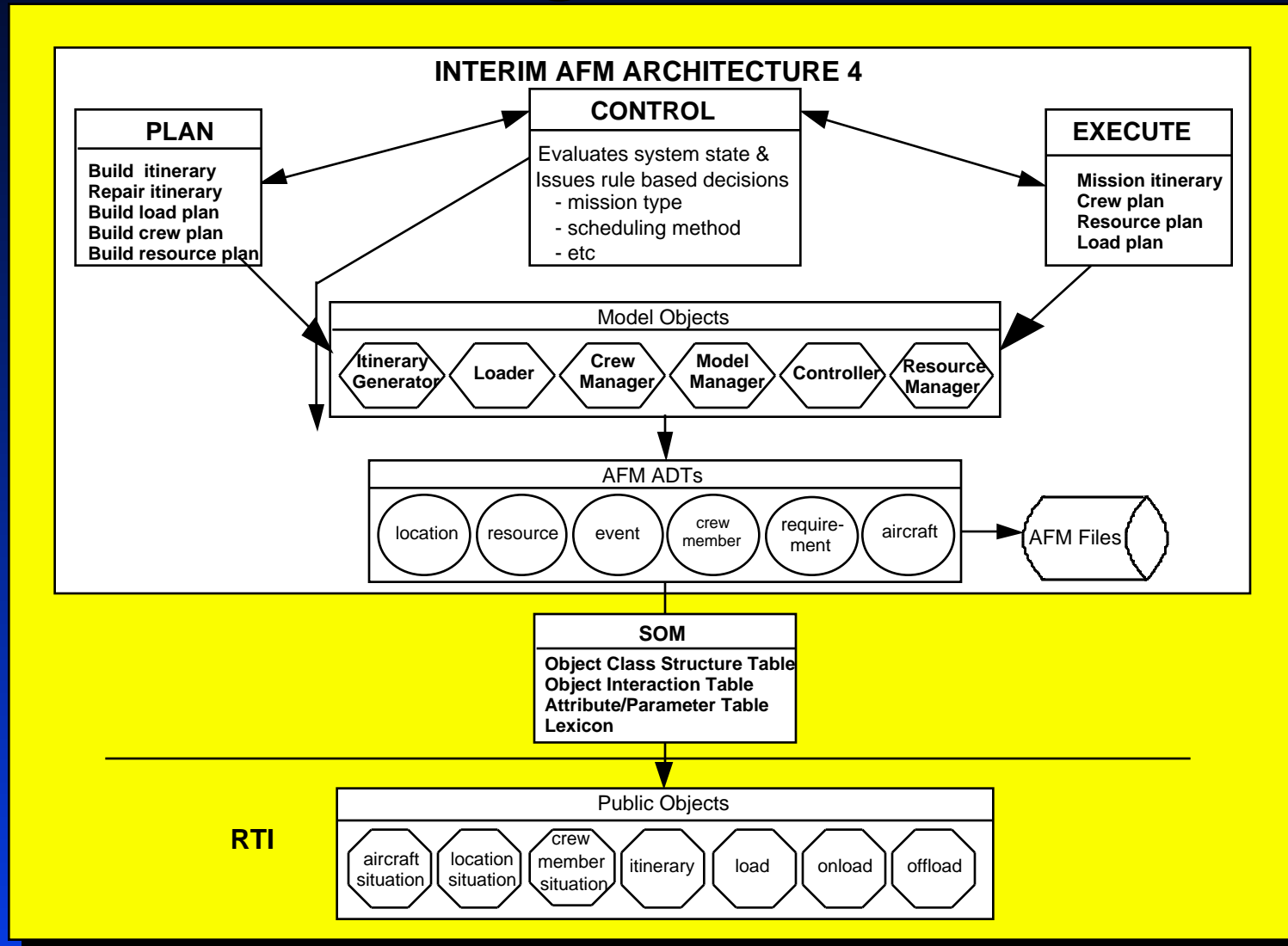
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III	Flight Plan Mission Plan AC OK Check Routing Cargo Load	Detail Load C2 Reserve Rte Select Rte	Aircraft Flight Level Quiet Hours Peacetime Ops Cargo Select Aircraft Theater Aircraft Allocat Airbase Weather C2 Interface	Itinerary	

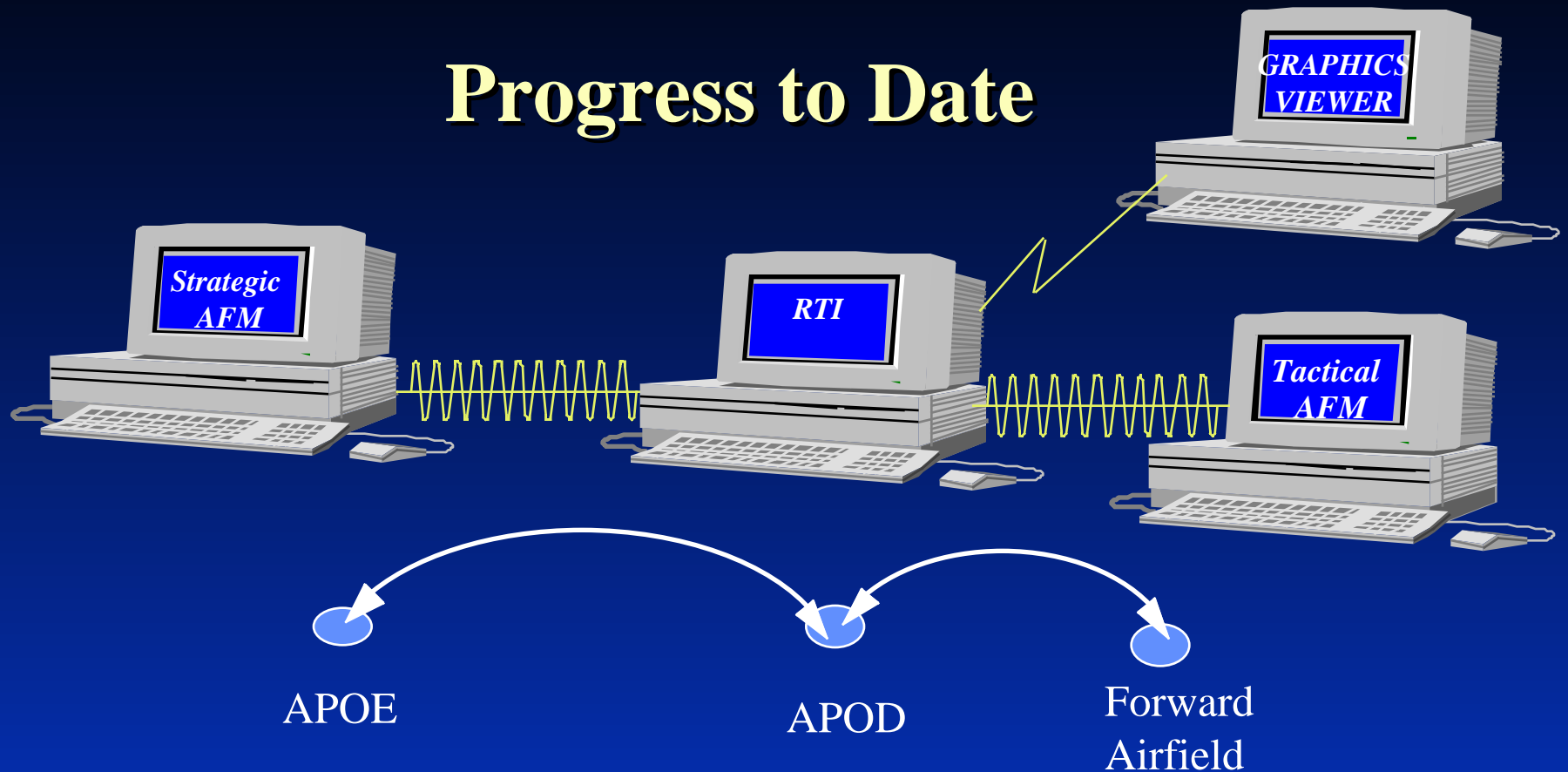
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IV	Crew Check Crew Plan Crew Plan Eval Crew Schedule Repair	Crew Search Diff Proc End Rest		Individual Crewmembers	Crewmember Situation

AFM Target Architecture



Progress to Date



- Baselined AFM
- Developed Migration Blueprint
- Validated Carving Methodology
- Demonstrated Initial HLA Compatibility

Observations

■ Advantages of Incremental Migration to HLA

- Tailor Migration to Funding
- Minimizes Requirement to Fund Two Models
- Mitigates Functionality Regression Problems
- Can Provide Parallel Processing Advantages on Existing Workstations

■ Disadvantages

- Not as Clean as New Model
- May be Gaps in Documentation
- Newer Approaches May be Required/Desired

Future Plans

■ Near Term (Funded)

- Interim Architecture 2
 - Aircraft & Airbase Objects Available to RTI
 - Schedule Repair, Improved Resource Modeling, Tanker/Airlift Mating
- Feasibility Study

■ On the Horizon (Not Funded)

- Federation Testing - Looking for Dance Partners
- Interim Architecture 3
 - Itinerary Object Available
 - Improved Controller, Mission Planning, Start/Stop
- Interim Architecture 4: Aircrews

Levels of Interaction

- **C2 Messages**
- **One Way Interaction**
 - **Airlift Flies in Warfight Model as Scheduled**
- **Two Way Interaction**
 - **Logistics/Mobility Affects Warfight**
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 - **Resource Competition**
 - **Key Interface: The Airbase**